

The opinion in support of the decision being entered today is  
*not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DONG-SIL NMN PARK,  
JAMES ANTHONY RUUD, and  
JEFFREY ALLAN PFAENDTNER

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Appeal 2007-1900  
Application 10/605,858  
Technology Center 1700

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Decided: July 31, 2007

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Before EDWARD C. KIMLIN, CATHERINE Q. TIMM, and LINDA M.  
GAUDETTE, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's  
decision rejecting claims 1-7, 9-26, and 28-33. We have jurisdiction under  
35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

## I. BACKGROUND

The invention relates to a diffusion coating process. Claim 1 is illustrative of the subject matter on appeal:

1. A process of forming a diffusion coating on a component, the process comprising the steps of:

mixing a particulate donor material containing a coating element, an activator dissolved in a solvent, and a particulate filler to form an adhesive mixture having a formable, malleable consistency, wherein the adhesive mixture does not contain an extraneous binder and the donor material and the filler within the adhesive mixture are cohered solely by the dissolved activator;

applying the adhesive mixture to at least one surface of the component; and

heating the component to a temperature sufficient to vaporize and react the activator with the coating element of the donor material to form a reactive vapor of the coating element, the reactive vapor reacting at the at least one surface of the component to form a diffusion coating containing the coating element.

The Examiner relies on the following prior art reference to show unpatentability:

Galmiche

US 3,900,613

Aug. 19, 1975

The rejections as presented by the Examiner are as follows:

1. Claims 1-5, 9, 11, 12, 21-25, 28, 30, 31, and 33 are rejected under 35 U.S.C. § 102(b) as anticipated by Galmiche; and
2. Claims 6, 7, 10, 13-20, 26, 29, and 32 are rejected under 35 U.S.C. § 103(a) as unpatentable over Galmiche.

In reviewing the rejections, we consider the dispositive issues arising from the contentions in the Brief filed August 29, 2006, the Answer filed November 29, 2006, and the Reply Brief filed January 29, 2007. For groups of claims Appellants argue together under a separate heading, we select one claim as representative and decide the relevant issues based on that claim.

## II. DISCUSSION

### *The Anticipation Rejection*

The Examiner rejected claims 1-5, 9, 11, 12, 21-25, 28, 30, 31 and 33 as anticipated by Galmiche. Appellants present arguments for three groups of claims. We address each group in turn.

#### A. Anticipation of Claims 1, 3-5, 9, 11, 12, and 31

We select claim 1 as representative of claims 1, 3-5, 9, 11, 12, and 31 which Appellants group together in contending that Galmiche does not anticipate these claims (Br. 17). The dispositive issues arising from the contentions of the Appellants and the Examiner are:

1. What is the scope of the language “an activator dissolved in a solvent” as recited in claim 1?
2. Is it reasonable to conclude that the ammonium chloride activator of Galmiche’s Example 1 is dissolved in the isopropyl alcohol solvent such that the limitation “an activator dissolved in a solvent” is met by the mixture of Galmiche?
3. What is the scope of the language “does not contain an extraneous binder” as further recited in claim 1?
4. Is the surface active agent of Galmiche an extraneous binder?

The first and third questions are questions of claim interpretation. During examination, “claims . . . are to be given their broadest reasonable

interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004). Absent claim language carrying a narrow meaning, we only limit the claim based on the specification when those sources expressly disclaim the broader definition. *In re Bigio*, 381 F.3d 1320, 1324-25, 72 USPQ2d 1209, 1210-11 (Fed. Cir. 2004).

Looking to the Specification, we find no particular definition or disclaimer of meaning with regard to "activator dissolved in a solvent." With regard to the meaning of "dissolve," Appellants cite a definition from Webster's New Twentieth Century Dictionary, Unabridged (Second Edition). According to Appellants' reproduced definition, dissolve means "to convert from a solid to a liquid state by merging with a liquid; to make a solution of; as, to dissolve sugar in water." (Reply Br. 6).

Reading the claim language broadly as is reasonable and consistent with the Specification, and as it would be interpreted by one of ordinary skill in the art, we determine that it does not exclude the presence of undissolved activator, it only requires that there be *some* "activator dissolved in a solvent." This interpretation is consistent with the plain meaning of "dissolve" as advanced by Appellants in the Reply Brief. Some of the activator will be converted to a liquid state and present in a solution. It is also consistent with the "comprising" nature of the claim which makes the claim open to the mixing of ingredients other than those specifically recited or specifically excluded. Claim 1 does not exclude the presence of activator which is undissolved.

With regard to the second question, we find that, based on the mixture disclosed in Example 1 of Galmiche, it is reasonable to conclude that some of the ammonium chloride activator is dissolved in the isopropyl alcohol solvent. There is no dispute that Galmiche's ammonium halide activator is "slightly soluble in alcohol" as found by the Examiner (Br. 18). Given that Galmiche mixes 1200 cubic centimeters of alcohol with 10 grams of oleic acid surface active agent and 13 grams of ammonium chloride, it is reasonable to conclude that some of the ammonium chloride dissolves in the alcohol especially upon mixing in the ball grinder for one hour (Galmiche, col. 6, ll. 30-35). Where the Examiner has reason to believe that a claimed property may, in fact, be an inherent characteristic of the prior art product, an Examiner possesses the authority to require applicant to prove that the subject matter shown to be in the prior art does not in fact possess the property. *In re Best*, 562 F.2d 1252, 1254-55, 195 USPQ 430, 433 (CCPA 1977). Appellants have not provided any objective evidence that dissolution does not occur.

With regard to "extraneous binder," again, we find no definition in Appellants' Specification nor do we find an express disclaimer of meaning. Hawley's Condensed Chemical Dictionary defines a binder as:

- (1) The film-forming ingredient in paint, usually either a drying oil or a polymeric substance.
- (2) In the food industry, a material used in sausage manufacture that absorbs moisture at high temperatures, e.g., various flours, dried milk, and soy protein.
- (3) Any cementitious material that is soft at high temperatures and hard at room temperature, used to hold dry powders or aggregate together, e.g., asphalt and sulfur in paving compositions, and resins used in sand casting.

Lewis, Richard J., Sr., Hawley's Condensed Chemical Dictionary (14th Ed., 2002).

Appellants contend that the surface active agent of Galmiche might contribute “at least slightly” to the cohesiveness of the mixture (Br. 19). Galmiche discloses the surface active agent as functioning as “conferring thixotropic properties,” i.e., non-newtonian flow characteristics, to the mixture. There is no evidence that the surface active agent serves a binding function. Moreover, even if the agent has some affect on cohesiveness, it does not seem to meet the definition of a binder as that term is used in the art.

We determine that the language “an activator dissolved in a solvent” as recited in claim 1 encompasses any amount of activator dissolved in a solvent. We further determine that there is a reasonable basis to conclude that mixing step of Galmiche’s Example 1 contains at least some “activator dissolved in a solvent.” We further conclude that the language “an extraneous binder” does not encompass surface active agents such as those described by Galmiche.

Appellants have not shown that the Examiner made a reversible error in rejecting claims 1, 3-5, 9, 11, 12, and 31 as anticipated.

B. Anticipation of Claims 21, 23-25, 28, 30, and 33

Appellants group claims 21, 23-25, 28, 30, and 33 together in contending that Galmiche does not disclose that a sufficient amount of alcohol is used to dissolve a sufficient amount of activator to form a solution (Br. 20). We select claim 21 as the representative claim in considering the issue arising from Appellants’ contention. The issue is: Does Galmiche



dissolve an activator in a solvent to form an activator solution as required by claim 21?

We answer in the affirmative.

Claim 21 requires a step of “dissolving an activator in a solvent to form an activator solution.” As we determined above, “dissolving an activator” encompasses dissolving any amount of activator, and the claim is open to the presence of undissolved activator in addition to the dissolved activator. Likewise, the claim encompasses forming any amount of activator solution. There is no limitation in the claim on the amount of solution nor does Appellant point to any definition or disclaimer in the Specification that serves as a limitation on the meaning of “activator solution” as claimed.

Galmiche forms a mixture of 1200 cubic centimeters isopropyl alcohol, 10 grams of oleic acid, and 13 grams of ammonium chloride. As we determined above, it is reasonable to believe that some of the ammonium chloride is dissolved in the alcohol because the ammonium chloride is slightly soluble in alcohol. It follows that the activator that is dissolved forms an activator solution. By definition, when a substance dissolves a solution is formed.

#### C. Anticipation of Claims 2 and 22

Appellants group claims 2 and 22 together in contending that Galmiche does not disclose the claimed step of “drying the adhesive mixture after the applying step to remove the solvent from the adhesive mixture and thereby form a solid pack adhering to the at least one surface of the component.” (Br. 20-21). We select claim 2 as representative. The issue is: Does Galmiche describe drying to remove solvent and adhering as required by claim 2?

We answer in the affirmative.

Galmiche describes drying by solvent removal as follows:

This removal of the solvent of the surface active agent is advantageously effected by subjecting the hollow part lined internally with the thixotropic cement to stoving, this stoving being preferably conducted at two successive times, namely, the first time at a temperature below the boiling point of the solvent to be removed, said solvent then evaporating, to a great extent, slowly and without forming bubbles, the second time at a temperature above the boiling point of the solvent of which the last traces are thus eliminated.

By proceeding thus boiling of the cement is avoided which would risk causing disturbance of good filling of the cavity of the treated part and *causing local separations*, even pockets where the reactive mass would occur *separated from the wall to be treated, such phenomena being obviously objectionable* for the heat diffusion treatment proper which has to take place following this solvent removal.

(Galmiche, col. 4, ll. 19-38 (emphasis added)). That the process is one of drying to remove the solvent is clear. That the process is conducted to form a solid pack adhering to the surface is evident from the use of a lower temperature followed by a higher above boiling temperature to avoid separation from the wall.

We determine that Galmiche describes drying to remove solvent and adhering as required by claim 2.

### *The Obviousness Rejection*

The Examiner rejects claims 6, 7, 10, 13-20, 26, 29, and 32 as obvious over Galmiche. Appellants present arguments for four groups of claims. We address each in turn.



A. Obviousness of Claims 7 and 10

With respect to claims 7 and 10, Appellants contend that Galmiche fails to disclose or suggest that a sufficient amount of alcohol is present to dissolve Galmiche's activator as recited in claim 1. As we found above that even a small amount of dissolution is encompassed by claim 1 and that it is reasonable to believe that such dissolution occurs in the mixing step of Galmiche's Example 1, we determine that the limitation is taught by Galmiche.

Appellants further contend that the surface active agent of Galmiche is an extraneous binder excluded by claim 1. For the reasons stated above, we determine that this is not the case.

Appellants have not shown that the Examiner committed reversible error in rejecting claims 7 and 10 as obvious.

B. Obviousness of Claim 29

With respect to claim 29, Appellants again contend that Galmiche does not form an "activator solution." As we stated above with respect to claim 21, we determine that the dissolved activator of Galmiche will form an activator solution.

Appellants have not shown that the Examiner committed a reversible error in rejecting claim 29.

C. Obviousness of Claims 13-20 and 32

With respect to claims 13-20 and 32, Appellants contend that these claims require "dissolving at least one ammonium halide activator in *water*." The issue is: Does a preponderance of the evidence support the Examiner's conclusion that it would have been obvious to use water as the solvent for the surface active agent?

We answer this question in the negative.

The Examiner's reasoning is as follows:

As to claims 6, 13-15, and 26, Galmiche et al. lacks a teaching of using water as the solvent. Galmiche et al. teaches using solvents that are absolute alcohols whose boiling point is preferably located between 80 C and 120 C (col. 3, lines 36-42). It is noted that water is chemically similar to alcohols and has a boiling point of 100 C, within the specified boiling point range. It would have been obvious to have used water as the solvent in the process of Galmiche et al. with the expectation of similar and successful results since water is inexpensive, readily available, and is similar to alcohols and has a boiling point in the specified range. Additionally, Galmiche's list of surface active agents, which is dissolved in the solvent, is merely exemplary and not limiting.

(Answer 5).

Galmiche discloses that:

as regards the surface active agent which has to be incorporated, in the form of solution, with the foregoing constituents to obtain the final thixotropic cement, there are preferably adopted,

as solvent, *an aliphatic or aromatic hydrocarbon, or an absolute alcohol*, whose boiling point is preferably located between 80° and 120°C.

(Gamiche, col. 3, ll. 30-37)

Water is not an aliphatic or aromatic hydrocarbon nor an absolute alcohol. The Examiner finds that water is chemically similar to alcohols, but water is not in the same chemical genus of organic solvents as are the compounds of Galmiche. The Examiner fails to provide the level of evidence required to support the conclusion of obviousness.

#### D. Obviousness of Claims 6 and 26

Claims 6 and 26 also require dissolving the activator in water. For the reasons provided above with respect to claims 13-20 and 32, we determine

that the Examiner failed to provide the level of evidence required to support the conclusion of obvious for these claims.

### III. CONCLUSION

We sustain the rejection of claims 1-5, 9, 11, 12, 21-25, 28, 30, 31 and 33 as anticipated under 35 U.S.C. § 102(b). We further sustain the rejection of claims 7, 10, and 29 as obvious under 35 U.S.C. § 103(a). However, we do not sustain the rejection of claims 6, 13-20, 26, and 32 as obvious under 35 U.S.C. § 103(a).

### IV. DECISION

The Examiner's decision is affirmed-in-part.

### V. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

tf/lr

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